

# **Environmental Public Health Tracking: practical methods for priority setting and evaluation**

## **Workshop Report**

**Basel, Switzerland, 19th August 2013**

Over forty participants from seventeen countries joined a workshop in Basel to share experiences on practical methods for priority setting and evaluation of environmental public health issues in the context of tracking programmes. The event was held the day before the start of the meeting of the International Society for Environmental Epidemiology (ISEE), jointly with the International Society for Exposure Sciences (ISAS) and the International Society for Indoor Air Quality (ISIAQ). The workshop was chaired by Dr Lina Balluz (CDC, USA), Prof Jan Semenza (ECDC, Stockholm), Dr Paolo Lauriola (ARPA Emilia Romagna, Italy) and Dr Giovanni Leonardi (Public Health England, UK).

### **Summary of workshop sessions**

Dr Giovanni Leonardi, Head of Epidemiology, Centre for Radiation, Chemical and Environmental Hazards, Public Health England, UK, welcomed the participants and introduced the workshop explaining the reasons behind the theme chosen. In his view, Environmental Public Health Tracking (EPHT) may be seen as an approach to facilitate translation of evidence into routine practice, rather than as yet another approach to construction of evidence on environmental public health. So, a tracking programme would not just provide data or information to users and stakeholders, but data representing evidence that is sufficiently mature to be translated into routine actions even in the middle of an economic and social crisis. This practice may be by individuals or communities, and in some cases it may be even action by government, but users of this sort of information may include many agencies including towns or even individuals with little or no resources other than their own initiatives to address environmental hazards to health. This does not mean that EPHT can only be defined after a research programme has clarified all aspects of a problem. It seems that practice over the years has identified situations when an information system can be justified because accumulated research findings point in that direction. However, once an information system is developed, its own findings may generate awareness of gaps in knowledge that need addressing by research. It is possible to attempt to develop research and tracking systems that relate to each other.

### ***The implementation and evaluation of EPHT programmes (CDC)***

Dr Lina Balluz, Chief of Environmental Public Health Tracking Branch, Centers for Disease Control and Prevention, USA, talked about the implementation and evaluation of EPHT programmes in the US. She shared some of their history and developments, from the Pew Commission review identifying tracking as an approach that would drive actions to improve health and facilitate prevention of chronic disease, all the way to the current infrastructure. EPHT is defined as the ongoing collection, integration, analysis, interpretation, and dissemination of data from environmental hazard monitoring, and from surveillance of human exposure and health effects. It was helpful to hear about the role of CDC as a hub providing a general toolbox for tracking, not dictating what specific projects would be developed. Individual States were able to identify their own environmental health problems, evaluate utility of available data, and generate information (measures) for public portal. It was particularly encouraging to hear about the many success stories that emerged from the EPHT efforts in several areas of application: (1) **Emergencies**: Deep Water Horizon Oil Spill, heat waves; (2) **Policy**: CO detectors are required in all rental and single family homes (Maine). (3) **Prevention**: Tracking identified an increase of heat-related

ER visits during heat events. City leaders approved cooling centers to open (Missouri). (4) **Education**: six neighborhoods in New Orleans, Louisiana, with high rates of low birth weight babies. The Health Department used the information to provide extra prenatal care resources and education. (5) **Health alert and advisories**: Missouri: linked demolition with childhood blood lead levels. Now issue neighborhood alert if demolition is scheduled. Further information can be found at the website: [www.cdc.gov/ephtracking](http://www.cdc.gov/ephtracking). The session was extremely well received, with participants indicating that it is always important to hear the experience from the US and the relevance for Europe.

### ***The European Environment and Epidemiology (E3) Network Geoportal (ECDC)***

Prof Jan Semenza, from the Office of the Chief Scientist, European Centre for Disease Control (ECDC), Stockholm, Sweden, described the European Environment and Epidemiology (E3) Network Geoportal (Web:[http://ecdc.europa.eu/en/healthtopics/climate\\_change/Pages/index.aspx](http://ecdc.europa.eu/en/healthtopics/climate_change/Pages/index.aspx)). This is a resource for geospatial analysis, aimed at monitoring epidemic precursors of infectious disease outbreaks, and thereby facilitating an earlier response that would have otherwise been possible. Although motivated primarily by the need for climate change adaptation, the work conducted so far on the E3 Network Geoportal has great promise for achievement of several objectives: (1) **Enhancing analytic capability**: link environmental data to surveillance data for trends and forecasts / for long-term adaptation to climatic and ecologic changes; (2) **Enhancing and accelerating response capability**: link environmental data to outbreak scenarios for efficient response. (3) **Disseminate information**: guide policy, practices, and other interventions; (4) **Support public health research**: relationship between disease and the environment; (5) **Promote advance collaborations**: EU agencies and other governmental and non-governmental organizations; (6) **Inform and strengthen Member States**: activities in preparing for the health impacts of climate change. Several specific projects supported by the E3 Geoportal (at regional and national levels) were also presented, including on leptospirosis, salmonellosis, vector borne diseases (mosquitoes), and tick borne encephalitis. The ECDC session received the highest score in the evaluation report, both in terms of its relevance and its presentation of the issues.

### ***Approaches to EPHT priority setting (Public Health England)***

Dr Mae Woods, a mathematical modeller based at London School of Hygiene and Tropical Medicine and Public Health England, shared aspects of a project on "Approaches to EPHT priority setting: documenting priorities for hazards to be included in a national EPHT", giving a presentation on "Decision support for Environmental Health Hazards". The approach being developed to support priority setting is a multi-criteria decision analysis (MCDA) support tool; this includes a method and software tool for assessment of priorities. MCDA is a mathematical tool which can support decisions on the ranking of options. A big advantage of using it is that criteria are multidimensional and model outputs are transparent, therefore open to scrutiny and to improvements until relevance to practitioner needs is achieved. Based on criteria such as sustainability, robust evidence of risk, acceptance of risk by the public, prospect of intervention, as well as information on plausible interventions, this MCDA study aims to produce **a quantitative ranking of priorities for interventions to be adopted by the public and health authorities**. The presentation was followed by a demonstration of the tool and an interactive questionnaire

involving audience participation. MCDA methods applied to prioritisation in environmental health had not been used by the great majority of participants (except 3), leading to numerous questions to clarify aspects of the method and its application to environmental health, as well as suggestions for the project undertaken by PHE that were much appreciated.

### ***The evaluation of health impacts in the vicinity of single installations (Italy)***

Dr Paolo Lauriola, Head of the Regional Thematic Centre "Environment and Health", Environmental Protection Agency (ARPA) Emilia Romagna, Italy, introduced two projects recently completed in Italy that benefited from integration of environmental and health data. Both projects were supported by excellent institutional collaboration to address some of the most complex and intractable environmental public health problems: the evaluation of health impacts in the vicinity of single point installations. First, the role of environment and health monitoring in the vicinity of waste treatment plants was presented by Dr Andrea Ranzi of ARPA Emilia Romagna, Italy, in the context of results from a recently completed study on health effects of waste incineration in several Italian regions. The local experiences and epidemiology results, available on the websites of Monitor ([www.monitor.it](http://www.monitor.it)) and ERAS Lazio ([www.eraslazio.it](http://www.eraslazio.it)), are being applied to **help policy makers choose between alternative waste management scenarios**, and encouraging reduction of waste production. Second, the role of environment and health monitoring in the vicinity of steel plants was presented by Professor Giorgio Assennato, General Director of ARPA Puglia, Bari, Italy (Web: <http://www.arpa.puglia.it/web/guest/vds>). He shared his experience concerning the risk assessment on the integrated steel works at Taranto (Italy), where a regional government law required a Health Hazard Evaluation, to be obtained by (a) an epidemiologic description of the area with specific attention to short latency diseases (mainly respiratory and cardiovascular diseases) and (b) a risk assessment procedure for use by a polluting plant to predict cancer and non-cancer outcomes. It was interesting to understand how the agreement between these two procedures resulted in a legal requirement for the industry to reduce emissions from this plant. Again, this would not have been feasible without institutional commitment to EPHT by appropriate linkage of environmental and health data. The participants recognised that point source investigation is an essential function of public agencies working on environmental health, however some thought that the relationship of specific research activities with the ongoing work on tracking systems could be made clearer in the future.

### ***The experience of developing environmental-health dimensions of routine surveillance data systems (France)***

Dr Sylvia Medina of the Department of Environmental Health, French Institute for Public Health Surveillance (InVS), Saint Maurice, France, reported on the experience of developing environmental-health dimensions of routine surveillance data systems. The **Apheis and Aphekom surveillance systems on air pollution and health** (Web: [www.aphekom.org](http://www.aphekom.org)) met the information needs of their key audiences by performing health-impact assessments (HIAs) on short- and long-term effects of air pollution over time using routine mortality and hospital admissions data. These initiatives were successful because: they built on an Europe-wide collaborative network from the **bottom up** to stimulate cooperation and facilitate decision making on local and national levels; they used **standardized protocols** and tools for data collection and analysis at the local level to

ensure quality and comparability; they kept **analyses simple** to ensure feasibility and long-term commitment; they **involved local entities** from the outset to ensure acceptance; they fostered **cross fertilization** between multiple disciplines and regions to create skilled and motivated local teams; and they focused on **benefits** of findings in messages to local stakeholders to increase impact on decision making. The Triple-S European project: Syndromic Surveillance in Europe (Web: [www.syndromicsurveillance.eu](http://www.syndromicsurveillance.eu)) also co-ordinated by InVS, assessed **Syndromic Surveillance Systems (SyS)** in Member States (MS) with a view to produce: 1) Guidelines for both human and veterinary SyS in MS, and 2) a proposal for a European strategy on SyS. The **complementarity between specific and syndromic surveillance in environmental health** was illustrated with some examples from France. The SurSaUD<sup>®</sup> system (Monitoring health emergencies and deaths in France) developed since the 2003 heat wave, integrates data from hospital emergency departments (EDs), medical emergency associations of GPs (SOS Doctors), and 3,000 “Communes” (administrative areas) and supports interpretation of expected as well as unusual public health situations. Examples of complementarity were the Heat Health Watch Warning System, Carbon Monoxide (CO) surveillance, Poisoning surveillance, Xynthia storm (2010), and the health monitoring of a gas leak at the Lubrizol company (2013). The participants acknowledged the key importance of activities by the French public health agency in coordinating international projects that established a European network of institutions that work on both SyS that could potentially be applied to environmental health topics, and on specific environmental health themes. Also, French initiatives on CO, etc. were seen as important precursors of multi-dimensional EPHT systems in the future.

## Overall outcome

Participants at the workshop included staff in national and regional institutes of public health or environmental protection, as well as university researchers in epidemiology or other disciplines related to environmental public health. Delegates from seventeen countries took part, eight European (UK, Italy, France, Belgium, The Netherlands, Sweden, Finland, Latvia as well as the European Commission) and nine from other continents (USA, India, Japan, South Korea, UAE, Mongolia, Nigeria, Australia and New Zealand).

Participants noted that the best aspects of the workshop included:

- The fact many countries were represented and their different points of view
- Hearing about different systems and their output requirements, as well as implementation
- High level and quality of presentations
- Review of much information related to urgent needs of countries and their communities
- Hearing about success stories resulting from EPHT programmes
- Information on how data is communicated to public
- Workshop covered most aspects of environmental public health (EPH).

Participants reported that the least successful aspects of the workshop included:

- No coffee break!
- Lecture style difficult for 3 hours
- Too many separate issues

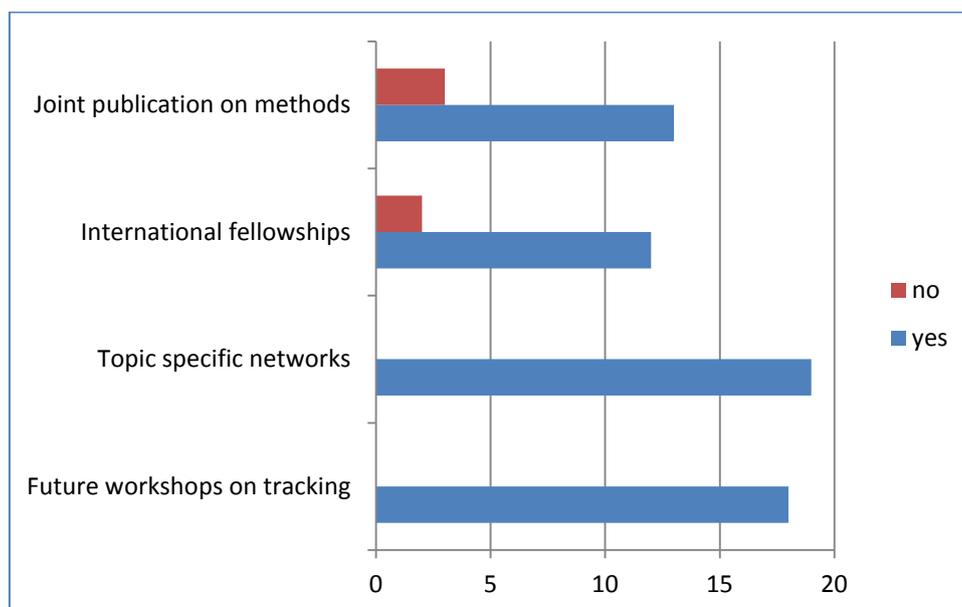
- Not enough dialogue with audience
- Would have preferred more focus on methodology & framework for priority setting
- Would have preferred more focus on methodology sharing and future recommendation to improve overall EPH.

Suggestions for how a workshop on this topic could be improved included:

- More interactive
- More discussions
- More time needed
- A short break
- Emphasise approaches and methods of prioritisation
- A lot of presentations on issues/problems/ obstacles (and some success stories), but not enough large scale solutions
- Overall excellent but could be better if more focused on cross-border issues as well.

A majority (62%) of participants were interested in the development of an international network for EPHT to share best practices and support development of systems and related studies. Among those interested, the most supported activities were contributions to topic specific networks (including existing ones), and organisation of future workshops on tracking where methods could be shared. Specific suggestions for future workshops included organisation of a discussion-roundtable to share experience and how do we find solutions, and also on how best to communicate to policy makers. Other supported activities were the joint publication on methodological topics and the establishment of international fellowships (see Figure).

**Figure 1. Feedback from participants (n. returned evaluations= 26) regarding activities of a proposed international network for EPHT.**



Overall, there was enthusiastic support among participants for the initiative to develop an international network on EPHT, especially in terms of the potential relevance of the topics discussed to the strengthening of existing networks on environmental health among

national and regional public health institutes, as well as development of new initiatives both across Europe and across continents. A suggestion to keep the interest of participants was to write a short newsletter.

## Conclusions

62% of participants expressed an interest in developing an international network on EPHT. The objectives, potential actions and benefits of this international network need to be shaped. The main difficulties to be addressed or issues to be solved did not seem to constitute an insurmountable obstacle when all the opportunities were considered. However, it seems helpful to recognise and briefly summarise both the common difficulties and the opportunities for the implementation of the network here.

### (i) Difficulties:

- The direction and the scope of work need to be well-defined and the benefits to public health need to be clearly stated. For example using scenarios and quantitative impact assessments;
- Any initiative (such as bids for support) needs to be “winnable”, based on persuasive approach and realistic expectations;
- The distinction between routine monitoring aspects and response to specific events or questions needs to be well-defined and characterized. This would be helpful not only for research purposes but for possible interventions, including economic compensation;
- Appropriate or promising interventions may be difficult to identify. The European reporting system “RASFF” may be an example of intervention system in relation to an environmental hazard.
- There are challenges in identifying what priority setting/indicators methods could be used as part of an EPHT.

### (ii) Opportunities and next steps:

- Organisation of the next workshop: two days on strategy for an international network on tracking with the focus on three main components:
  1. Partnership
  2. Science/Data
    - Definitions and conceptual/lexical differences between countries
    - Collection of available information
    - Data availability and needs at national levels
    - Review of indicators (review of results of previous EU projects, such as EUROHEIS, WHOEHIS, etc)
    - Publication plan (e.g. joint paper on principles and guidelines, possibly joint handbook gathering experiences from all members)
    - Training strategy
  3. Ethics/confidentiality
    - Legal framework (including International Health Regulations)
    - Ethical issues (including relationship with industry, both on funding and acceptable relationship as exchange of information)
    - Security of individual information, cultural sensitivities across countries
    - Reasons for confidentiality including commercial confidentiality

- Statement of intent of support to the international network on EPHT by international associations of public health institutes like IANPHI and others, and international organisations such as EU agencies, EEA, WHO, etc.

The organisers discussed the workshop outcomes and agreed to take forward initiatives to capture the opportunities identified.